

DEPARTMENT OF PUBLIC HEALTH AND ENVIRONMENT

Water Quality Control Commission

5 CCR 1002-84

RECLAIMED WATER CONTROL REGULATION

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84.4 APPLICABILITY

This regulation applies to the use of reclaimed water for landscape irrigation, agricultural irrigation, fire protection, industrial, and commercial uses identified in section 84.8 of this regulation. This regulation does not apply to wastewater that has been treated and released to state waters prior to subsequent use or to wastewater that has been treated and used at a domestic wastewater treatment plant site for landscape irrigation or process uses. This regulation applies to individual treaters and users, as defined below, upon the issuance of a Notice of Authorization pursuant to section 84.6(C) herein by the Water Quality Control Division.

84.5 DEFINITIONS

The following definitions shall apply:

- (1) Agricultural Irrigation means use of reclaimed water for the irrigation of crops and trees, excluding crops produced for direct human consumption, range crops where dairy animals forage, and trees that produce nuts or fruit intended for human consumption.
- (2) Agricultural Irrigation User means a person who uses reclaimed water for the purpose of agricultural irrigation.
- (3) Agronomic Rate means the rate of application of reclaimed water and associated nutrients to plants that is necessary to satisfy the plants' nutritional and watering requirements while strictly minimizing the amount of nutrients that run off to surface waters or which pass below the root zone of the plants.
- (4) Automated Vehicle Washing means the cleaning of vehicles and associated equipment, such as trailers, where automated equipment is used to apply spray water, cleaning products, and/or rinse water, where there is no public exposure to reclaimed water under normal operations and only limited and controlled contact with reclaimed water by trained workers.
- (5) Commercial Laundry means a facility that uses water to clean clothing and other textile products where only laundry workers operate the washing machines and cleaning equipment, where there is no public exposure to reclaimed water under normal operations and only limited and controlled contact with reclaimed water by trained workers.
- (6) Commercial User means a person who uses reclaimed water in the operation of a business listed in Table A of section 84.8.
- (7) Division means the Water Quality Control Division of the Colorado Department of Public Health and Environment.
- (8) Evaporative Industrial Processes means the use of water in an industrial process where the benefit of such use requires the evaporation of water, requiring additional make-up water, where

there is no public exposure to reclaimed water under normal operations and only limited and controlled contact with reclaimed water by trained workers.

- (9) Fire Protection -- Nonresidential means firefighting activities where water is made available at fire hydrants located in areas other than residential, from fire trucks, and in fire sprinkler and interior standpipe systems in buildings in commercial/industrial areas.
- (10) Fire Protection -- Residential means firefighting activities where water is made available at fire hydrants in residential areas, from fire trucks, and in fire sprinkler and interior standpipe systems at any structure where the occupants do not have access to the plumbing for maintenance and repair.
- (11) Industrial User means a person who uses reclaimed water for industrial processes or in the construction process. Approved industrial uses are listed in Table A of section 84.8.
- (12) Irrigation System means the facilities, piping and other equipment used by a Landscape Irrigation User or an Agricultural Irrigation User.
- (13) Landscape Irrigation means irrigation of areas of grass, trees, and other vegetation that are accessible to the public, including, but not limited to, parks, greenbelts, golf courses, and common areas at apartments, townhouses, commercial/business parks, and other similar complexes.
- (14) Landscape Irrigation User means a person who uses reclaimed water for the purpose of landscape irrigation.
- (15) Manual Non-Public Vehicle Washing means the cleaning of vehicles and associated equipment, such as trailers, where any or all of the following are applied manually in the cleaning process: spray water, cleaning products, and/or rinse water; where there is no public access to the vehicle washing facility and only limited and controlled contact with reclaimed water by trained workers,
- (16) Non-Discharging Construction and Road Maintenance means the use of reclaimed water for nonpotable applications where water is required for cooling, wetting, dust suppression, or other construction and road maintenance activities, where there is no public exposure to reclaimed water under normal operations and only limited and controlled contact with reclaimed water by trained workers.
- (17) Non-Evaporative Industrial Processes means the use of water in an industrial process where water is not evaporated in the process and is used within a contained system, where there is no public exposure to reclaimed water under normal operations and only limited and controlled contact with reclaimed water by trained workers.
- (18) Person means an individual, corporation, partnership, association, state or political subdivision thereof, federal agency, state agency, municipality, commission, or interstate body.
- (19) Point of Compliance means a point identified by the treater in the reclaimed water treatment or transmission system after all treatment has been completed and prior to dilution and blending.
- (20) Reclaimed Water is domestic wastewater that has received secondary treatment by a domestic wastewater treatment works and such additional treatment as to enable the wastewater to meet the standards for approved uses.
- (21) Resident-Controlled Landscape Irrigation means irrigation of areas of grass, trees and other vegetation located on the property of a single family or other residential occupancy where the

occupant is the User and is responsible for the maintenance and/or operation of the irrigation system.

- (22) Restricted Access means controlled and limited access to the areas where reclaimed water meeting Category 1 standards, as defined in section 84.7, is used.
- (23) Trained Worker means a person employed at the site where reclaimed water is used, who has been provided with the information specific to the additional conditions specified in section 84.8 that are applicable to that site's approved use(s) of reclaimed water.
- (24) Transmission System means the treater's facilities that transport treated reclaimed water between the treater and users.
- (25) Treater means a person who treats and provides reclaimed water to a user for the purpose of landscape irrigation, agricultural irrigation, fire protection, commercial use or industrial use. The treater and the user may be the same entity.
- (26) Unrestricted Access means uncontrolled access to the areas where reclaimed water meeting the Category 2 standards, as defined in section 84.7, is used.
- (27) User means a person who uses reclaimed water for landscape irrigation, agricultural irrigation, fire protection, commercial or industrial uses.
- (28) User Plan to Comply means the information and documentation a user is required to submit to the treater under sections 84.9 of this regulation.
- (29) Washwater Applications means water used in washing of miscellaneous construction/maintenance equipment, as well as concrete washout, mineral processing, and other similar uses where reclaimed water is used to remove material from equipment or a desired product, where there is no public exposure to reclaimed water under normal operations and only limited and controlled contact with reclaimed water by trained workers.

84.6 ADMINISTRATION

- (A) Letters of Intent.

Treaters shall submit Letters of Intent to the Division and to the local health authority that shall include:

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- (3) An analysis that demonstrates that reclaimed water used for landscape irrigation or agricultural irrigation will be applied at or below agronomic rates. Landscape irrigation and agricultural irrigation uses may also be subject to waste load allocations or limits as contained in a Total Maximum Daily Load (TMDL) or control regulation governing the watershed within which the irrigation occurs.

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84.8 RECLAIMED WATER USES

Table A: Approved Uses of Reclaimed Water

Approved Uses	Category 1	Category 2	Category 3	Additional Conditions Required
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				84.8(A)
INDUSTRIAL				
Evaporative Industrial Processes	Allowed	Allowed	Allowed	1
Washwater Applications	Not Allowed	Allowed	Allowed	2,3,7
Non-Discharging Construction and Road Maintenance	Allowed	Allowed	Allowed	3,7
Non-Evaporative Industrial Processes	Allowed	Allowed	Allowed	7
LANDSCAPE IRRIGATION				
Restricted Access	Allowed	Allowed	Allowed	
Unrestricted Access	Not Allowed	Allowed	Allowed	3,4
Resident-Controlled	Not Allowed	Not Allowed	Allowed	3,4,5
COMMERCIAL				
Zoo Operations	Allowed	Allowed	Allowed	
Commercial Laundries	Not Allowed	Allowed	Allowed	7
Automated Vehicle Washing	Not Allowed	Allowed	Allowed	3,8
Manual Non-Public Vehicle Washing	Not Allowed	Allowed	Allowed	3,8
FIRE PROTECTION				
Nonresidential Fire Protection	Not Allowed	Allowed	Allowed	6
Residential Fire Protection	Not Allowed	Not Allowed	Allowed	6
AGRICULTURAL IRRIGATION				
Non-Food Crop Irrigation and Silviculture	Allowed	Allowed	Allowed	3

- (A) Additional Conditions Required. In addition to the conditions for use of reclaimed water listed in section 84.9, the Division will include the following best management practices in the Notices of Authorization for the associated uses listed in Table A:
- (1) If there is a significant likelihood for aerosols to drift to public or worker areas, adequate signage is required. Consider supplemental disinfection and disinfectant residual and/or public access restrictions.
 - (2) Washing activities must be contained (e.g., flow to lined pit or approved concrete washout area, or within enclosed equipment), as to prevent any off-site runoff or discharge to ground water. Workers shall be trained on the proper use and washing procedures when using reclaimed water.
 - (3) Application rates or other measures shall be employed to minimize ponding on or runoff from the area approved for application or use.
 - (4) No reclaimed water piping shall be extended to or supported from any residential structure and there shall be no accessible above grade outlets from the reclaimed water system at any residential structure. At least one exterior hose bib, supplied with potable water, shall be provided at each residential structure.
 - (5) The treater shall develop and implement a public education program to inform residents and plumbing contractors and inspectors who deal with the Resident-Controlled Landscape Irrigation systems about the need to: a) strictly prohibit cross-connections

between the reclaimed water and potable water systems; b) clearly and distinctively identify the potable service lines and plumbing from the reclaimed water service lines and plumbing; and c) avoid contact with and strictly minimize ponding or runoff of the reclaimed water. The treater shall implement a cross-connection inspection program and shall have the authority to discontinue reclaimed water service to any resident who flagrantly or repeatedly misuses reclaimed water in a manner inconsistent with this regulation. The treater shall maintain a map indicating all areas where reclaimed water is provided for Resident-Controlled Landscape Irrigation.

- (6) The user shall develop and implement a program, including notices in fire department newsletters and fire department preplans, to educate the public and firefighters that reclaimed water is used for fire protection. The user shall develop a program to educate plumbing and fire protection system contractors and inspectors expected to access the fire protection system about the need to confirm that cross-connections between the reclaimed water and potable water systems do not exist and about the requirement to clearly identify the potable and reclaimed water systems throughout the building. All personnel authorized to use the reclaimed water for fire protection shall be educated to avoid contact with and strictly minimize ponding or runoff of the reclaimed water during non-emergency testing or training. An annual cross-connection inspection shall be made at each structure to which reclaimed water piping is extended for fire protection to ensure that no cross-connection exists. The treater shall maintain a map indicating the location of all fire hydrants, sprinkler systems and standpipe systems provided with reclaimed water.
- (7) Users of Category 1 Reclaimed Water (if allowed for the use per Table A) or Category 2 Reclaimed Water shall employ measures to prevent the frequent exposure of workers and the public to aerosols generated in the use of reclaimed water. Measures shall include at least one of the following: minimum setback distance of 100 feet between the nearest source of aerosol generation and areas where workers or the public are normally present; physical barriers between aerosol sources and humans; personal protective equipment to prevent aerosol inhalation; functionally equivalent measures approved by a qualified individual (e.g., a certified industrial hygienist); or other means approved by the Division. Given the higher level of treatment provided for Category 3 Reclaimed Water, additional measures to address exposure of workers or the public to aerosols are not required.
- (8) Where there is the potential for worker or public exposure to aerosols generated in the use, users of Category 2 Reclaimed Water shall employ measures to prevent the inhalation of aerosols from reclaimed water by workers and the public. Measures shall include at least one of the following: personal protective equipment documented to prevent aerosol inhalation; or functionally equivalent measures approved by a qualified individual (e.g., a certified industrial hygienist) and documented to prevent aerosol inhalation.

84.9 CONDITIONS FOR USE OF RECLAIMED WATER

- (A) Landscape Irrigation Users and Agricultural Irrigation Users shall include the following in a User Plan to Comply:
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- (B) Commercial, industrial, and fire protection Users shall include the following in a User Plan to Comply:
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- (5) The fate of waste water streams from the commercial or industrial operation or process after use (e.g., discharge to sanitary sewer, lined evaporation/recovery pond, subsequent permitted discharge, or other location);

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84.10 MONITORING, RECORD KEEPING AND REPORTING

- (A) Treaters and users operating pursuant to a Notice of Authorization shall be subject to such monitoring, record keeping, and reporting requirements as may be reasonably required by the Division to ensure compliance with the requirements of this regulation, including, but not limited to the following:
 - (1) For treaters: the quality of reclaimed water produced and delivered at the point(s) of compliance, inspections of a representative number and type of user sites to determine user compliance, and self-certifications submitted to the treater by users.
 - (2) For each user, the total volume of reclaimed water used per year. For Landscape Irrigation Users and Agricultural Irrigation Users, each location with the associated acreage where reclaimed water was applied.
 - (3) For each user using Category 1 reclaimed water, confirmation that reclaimed water was used only during authorized use times (if applicable).
- (B) Treaters shall provide an annual report to the Division for the previous year, by March 31st, that includes the following:

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84.25 STATEMENT OF BASIS SPECIFIC STATUTORY AUTHORITY AND PURPOSE: MAY 13, 2013
RULEMAKING; EFFECTIVE JULY 30, 2013

The provisions of sections 25-8-202, 25-8-205(1) and 25-8-308(1)(h), C.R.S. provide the specific statutory authority for adoption of amendments to this regulation. The Commission also adopted, in compliance with section 24-4-203(4), C.R.S., the following statement of basis and purpose.

BASIS AND PURPOSE

The use of reclaimed water has significantly increased in Colorado over the past decade and Treaters and potential Users of reclaimed water have identified an interest in new uses for reclaimed water that are not currently authorized under Regulation No. 84. Proponents from the Joint Water Reuse Committee of the Rocky Mountain Section American Water Works Association and Rocky Mountain Water Environment Association ("RMSAWWA/RMWEA") and the Colorado Section of the WaterReuse Association, participating in a Water Quality Forum Work Group, requested that the Commission review Regulation No. 84 for the purpose of considering additional uses of reclaimed water.

As the Commission indicated in its initial adoption of Regulation No. 84, the use of reclaimed water is subject to Colorado water rights law. Several large municipalities have the right to use a portion of their water supply "to extinction" under Colorado law and have significant amounts of such water that are currently being discharged from the wastewater treatment facility rather than being further treated and reused.

In the 2010 triennial review for Regulation No. 84, the Commission discussed ideas that the Division and interested parties had brought forth for adopting new uses including modifying the regulation to establish broader categories of uses within which the Division could approve new uses. The Commission understands that the Division would need additional resources to implement such a scheme. However, in the interest of addressing the growing use of reclaimed water in Colorado in a timely manner, the Commission approved the renaming and addition of several specific new uses through these modifications to Regulation No. 84.

The Commission found that the following modifications to the authorized uses in Section 84.8 Table A are consistent with the intent of the original authorization of these uses, and present no increase in the potential risk to human health or the environment. By modifying the nomenclature and definitions for these categories of approved uses, the regulation and Notices of Authorization issued by the Division afford the same protections for comparable industrial and commercial uses with similar human exposure, environmental release potential, and cross-connection.

- "Cooling Tower" was renamed "Evaporative Industrial Processes"
- "Closed Loop Cooling System" was renamed "Non-Evaporative Industrial Processes"
- "Dust Control", "Soil Compaction", and "Mechanized Street Cleaning" were combined and renamed "Non-Discharging Construction and Road Maintenance"
- "Concrete Mixing and Washout" was divided into two uses, "Non-Evaporative Industrial Processes" and "Washwater Applications," respectively

The Commission found that adding several new uses, with appropriate conditions placed on their use, will further facilitate the safe and efficient use of Colorado's limited water resources. The Commission approved the addition of the following Commercial Uses: Commercial Laundries, Automated Vehicle Washing, and Manual Non-Public Vehicle Washing, and a new Agricultural Irrigation use.

Evaporative Industrial Processes

The Evaporative Industrial Processes use includes, but is not limited to, the following representative applications where water is used in an industrial process where the benefit of such use requires the evaporation of water, requiring additional make-up water: cooling tower use and gas and odor adsorption. In modifying the nomenclature for this category so that it now covers multiple evaporative industrial process uses, the Commission recognized that many evaporative industrial processes have the potential to use reclaimed water instead of potable or other water supplies, with similar low potential for human exposure, releases to the environment, and cross connections. It is the Commission's intent that no discharges to waters of the state shall be allowed with this use unless authorized via an approved permit under the Colorado Discharge Permit System (CDPS).

Non-Evaporative Industrial Processes

The Non-Evaporative Industrial Processes use includes, but is not limited to, the following representative applications where water is used in an industrial process, is not evaporated in the process, is used within a contained system, and is either discharged to a sewer system as a blow down (e.g., closed loop cooling systems) or is incorporated into a product that is not intended for personal contact or ingestion (e.g., those in which the water is retained in the product and conditions prevent excessive microorganism growth, such as the high pH of batched concrete): closed loop cooling systems (a previously-approved use, Sections 84.8 and 84.22), concrete makeup water (a previously-approved use as concrete mixing and washout, Sections 84.8 and 84.22), boiler feed water, water for lime slaking, and industrial process makeup water. In modifying the nomenclature for this category so that it now covers multiple non-evaporative industrial process uses, the Commission recognized that many industrial processes have the potential to use reclaimed water instead of potable or other water supplies, with similar low potential for human exposure, releases to the environment, and cross connections. It is the Commission's intent that no discharges to waters of the state shall be allowed with this use unless authorized via an approved permit under the CDPS.

Non-Discharging Construction and Road Maintenance

This approved use incorporates the following previously-approved representative uses for Mechanized Street Sweeping, Soil Compaction, and Dust Control. Other similar uses of water, including but not limited to cooling water for pavement cutting operations, are also authorized under this approved use. It is the Commission's intent that no discharges to waters of the state shall be allowed with this use unless authorized via an approved permit under the CDPS.

Washwater Applications

The Commission approved the new Washwater Applications use, which includes concrete washout as previously approved under Concrete Mixing and Washout. Washwater Applications would also include water used in washing of miscellaneous equipment, washing of product in mineral processing, and other similar uses where reclaimed water is used to remove material from equipment or a product. This use has been evaluated for risks to human health via ingestion, inhalation, and dermal contact. Best management practices (BMPs, specified as Additional Conditions in Section 84.8 and 84.9) and allowable water qualities are specified to mitigate these risks. It is the Commission's intent that no discharges to waters of the state shall be allowed with this use unless authorized via an approved permit under the CDPS.

Commercial Laundries, Automated Vehicle Washing, and Manual Non-Public Vehicle Washing

The Commission approved three new uses not previously authorized under Regulation 84 (Commercial Laundries, Automated Vehicle Washing, and Manual Non-Public Vehicle Washing) based upon an evaluation of the potential human health risks via ingestion, inhalation, dermal contact and cross-connection as well as the potential for discharging reclaimed water to a water of the state (groundwater or surface water). BMPs for each use and allowable water qualities were specified to minimize these risks. In assessing the proposed modifications to Regulation 84, typical uses of water in commercial laundries and automated and manual vehicle washing facilities were reviewed to characterize the likelihood and impacts of human contact with reclaimed water and releases of reclaimed water to waters of the state.

The Commission found that the potential for ingestion is negligible for all three proposed uses, in light of the limited access to the public and the commercial and industrial nature of the water use. The risk of ingestion in these new uses is further mitigated by the BMPs specified for these uses in Regulation 84. In light of the potential worker or public contact with aerosols in vehicle washing applications, the Commission considered additional information to assess the potential for human health effects of such contact. This information included the 2012 USEPA Guidelines for Water Reuse, regulations in other states that authorize commercial laundry and vehicle washing uses, a risk assessment based on available research and literature regarding health impacts of inhalation of recycled water aerosols, and a comparison of water quality in internally-recycled vehicle washing water systems fed by potable water to the water quality of recycled water produced by an existing Treater. This indicated to the Commission that a high level of disinfection (Category 3 water) is appropriate for situations where there is a high likelihood of frequent worker contact with reclaimed water aerosols for those uses. Alternatively, BMPs should be employed to prevent worker inhalation exposure if less stringent disinfection (Category 2 water) is employed.

The Commission found that:

- Secondary treatment and disinfection (Category 2 Reclaimed Water) is an appropriate treatment requirement for the use of reclaimed water in commercial laundry where there is no frequent worker or public exposure to aerosols generated from reclaimed water use.
- In vehicle washing facilities with a likelihood of worker or public exposure to aerosols generated from reclaimed water use, filtration and high-level disinfection (Category 3 Reclaimed Water) provides human health protection against aerosol inhalation risks. Alternatively, BMPs must be used to prevent the inhalation of aerosols with use of Reclaimed Water Category 2.
- Effective BMPs for physically preventing human contact with aerosols include personal protective equipment documented to prevent inhalation of aerosols, or other means as documented by a certified industrial hygienist.

Accordingly, the Commission approved the addition of two new Additional Conditions at Section 84.8(A)(7) and 84.8(A)(8) for applicability to Commercial Laundries, Automated Vehicle Washing, and Manual Non-Public Vehicle Washing as identified in 84.8 Table A.. The Commission also determined that the Additional Condition in 84.8(A)(7) is applicable to the following renamed and new uses, in consideration of the type of use and potential for frequent worker or public exposure to aerosols: Washwater Applications, Non-Discharging Construction and Road Maintenance, and Non-Evaporative Industrial Processes.

The Commission found the overall risk to Commercial Laundry and Vehicle Washing workers and the public associated with ingestion and dermal contact is less than swimming at a swim beach and comparable to or less than other previously approved commercial and industrial uses of Category 1, 2, and 3 Reclaimed Water. For each of these proposed uses, the Commission found the potential for cross-connecting potable and recycled water piping is similar to previously approved Commercial and Industrial uses of Category 1, 2, and 3 Reclaimed Water. The existing BMPs for cross-connection control in Regulation 84 (at 84.9(C)(5), 84.9(C)(7), and 84.9(C)(8)) will apply to these new uses as well.

The Commission approved the modification of Section 84.8(A)(3) to read "Application rates or other measures shall be employed to minimize ponding on or runoff from the area approved for application or use," and specified that this Additional Condition be required for Automated Vehicle Washing and Manual Non-Public Vehicle Washing uses. It is the Commission's intent that no discharges to waters of the state shall be allowed with these uses unless authorized via an approved permit under the CDPS.

Non-Food Crop Irrigation and Silviculture

The Commission found that the use of reclaimed water for irrigation of certain agricultural crops and trees, when implemented in accordance with the reclaimed water quality standards and BMPs established in Regulation 84, is protective of public health and the environment. Adding agricultural irrigation as an approved use of reclaimed water will encourage the expanded use of reclaimed water in Colorado and is

anticipated to reduce the regulatory compliance burden on Treaters and Users by allowing them to be permitted under a single control regulation where multiple approved uses of reclaimed water are implemented.

Health risks to the public or workers associated with potential contact with reclaimed water used for agricultural irrigation were determined to be of a comparable or lower magnitude than those associated with landscape irrigation. Environmental risks associated with runoff or excessive percolation of reclaimed water to waters of the state are determined to be of a comparable or lower magnitude than those risks associated with landscape irrigation. The Commission found that there is little increased risk of cross connection associated with the use of reclaimed water versus traditional sources of water used for agricultural irrigation.

The Commission found that Category 1 water is acceptable for irrigation of those non-food crops permitted to be irrigated with reclaimed water pursuant to this Control Regulation and that the criteria for Category 1 water are generally consistent with the treatment level requirements and water quality standards adopted by several other states (e.g., Arizona, California, Florida, and Texas) and countries for the irrigation of non-food crops. The Commission found that the BMPs established for restricted access landscape irrigation are appropriate and adequate for agricultural irrigation.

Annual Report Requirements

As part of this rulemaking, the Commission also revised the annual reporting provision to revise the due date of annual reports from January 31 of each year to March 31, to allow Treaters sufficient opportunity to compile reclaimed water use data and related records from the preceding calendar year.